Alternation of Superconduction and Conduction Within Cyclical Loops for Electron Self-Acceleration in Support of Efficient Gamma Generation

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Introduction

The generation of Gamma Rays has historically been an energy-intensive proposition requiring bulky electromagnets to accelerate electrons to the necessary velocities.

A compact and energy-efficient mechanism for Gamma generation would open up a range of new possibilities for nano- scale imaging, fission and fusion ignition and, likely, other unexplored potential applications.

Abstract

When an electron travels through a standard conductor such as copper, it moves not at the speed of light, but a velocity of approximately 10% of the speed of light which can fluctuate depending upon a variety of conditions sc. the density of the material and the number of electrons in each electron cloud of the conducting medium as well as any ambient magnetic fields. Electrons, like photons, have a natural tendency to attempt to move at the speed of light, but are prevented from doing so by their interaction with the discrete magnetism of surrounding matter's electrons. If a fermion is like a zip-liner, an electron being conducted conventionally is like a person travelling by way of grabbing a series of monkey bars. An electron being conducted conventionally speeds up and slows down many times as it enters and exits the zones of magnetic influence of a great many nearby electrons.

The propulsive force accelerating electrons and photons is the emission of its own discrete magnetism. This can be imagined to be a bit like a person inflating a latex balloon and purposefully not tying it shut, releasing the balloon and watching as gas pressure propels the ballon haphazardly about the space as the balloon makes an impolite noise. This is important to understand as it means that electrons, when they are fermionized through passage through a room-temperature superconductor such as that described in 1 January 2024 by this author, are not being accelerated by the superconductor, but are rather simply being allowed to travel unimpeded by the conduit. The behavior of electrons as they enter such superconductive conduits and shortly after they exit those conduits has not been studied. This author predicts that a study of this behavior would reveal that electromagnetic energy in the Gamma range is generated whenever a fermion transitions from a superconductive conduit into a standard, conductive wire and even moreso when the transition is directly from a superconductor to a semiconductor. This effect is the result of the extreme velocity of the electron as it collides with the electrons of the conductive wire.

For example, when we pass electrons through a light-emitting diode, electromagnetism in the visible spectrum is emitted. This is the case because

the electrons are moving at a conventional velocity and the N-type semiconductors have tendency to conduct electrons at a lower velocity than standard conductors such as copper. It's in the process of deceleration that light-emission is occurring in an LED. This author proposed a new type of LED in 29 November 2023 which would work according to the principle of colliding electrons moving from diametrically opposed directions to create a greater velocity differential which would make light emission more efficient.

Research concerning superconduction has been focused on achieving superconduction at higher temperatures, but no research has been focused upon purposefully bringing about superconduction, suspending it and then resuming it with maximum rapidity. I have suggested this previously, but only in the context of describing a novel type of computer processor.

For the purposes of this proposal, it would be desirable to use the 1 January 2024 superconductive conduit design in conjunction with more conventional conductors or, more likely, semiconductors in order to purposefully bring about the repeated acceleration and deceleration of electrons from 10% of C to the fermionic state and to observe the time and distance required for changes in velocity to occur. These changes in velocity are not instantaneous and could be predicted to occur over a distance of anywhere from five to 25 atomic spaces. It could also be predicted that acceleration is more gradual than deceleration with deceleration requiring approximately five atomic spaces and acceleration to the fermionic requiring closer to 25. This is purely hypothetical as this author lacks the necessary equipment to test this hypothesis.

With this premise in mind, a mechanism could be constructed in which electrons could be cyclically fermionized and de-fermionized many times in the context of a series of micron-scale loops whereas the position of the de-fermionization zone in that loop would determine the direction of Gamma emission. This de-fermionization zone would resemble a fractional slice of a "doughnaught" graph or the open section of a round jewelry clasp.

Because the energy needed to accelerate the electrons would be coming from the electrons, themselves, such a Gamma emission mechanism would require no more energy than an LED and many of the electrons could be recycled within the loops.

From an engineering perspective, perhaps the greatest challenge would be in keeping the conductor/semiconductor sufficiently cool to prevent the vaporization of the semiconductor segments of the loops as Gamma emission can be a highly exothermic process. However, as this mechanism does not require that electrons be accelerated with bulky magnets, heat should be far more manageable than in conventional Gamma generators.

When coupled with a two-dimensional semiconductor layer of as little as a single atom's thickness, such a mechanism would provide a revolutionarily efficient Gamma generation mechanism of low intensity which; when integrated into an array, could generate consequential collimated Gamma emissions with limited requirements for Size, Weight and Power. If an array of these Gamma emitters were arrayed with an inward focus from around the

circumference of a sphere, they could be used as a viable alternative to the use of fission devices for triggering “thermonuclear” fusion reactions.

Conclusion

The fact that electrons are even capable of self-acceleration to 100% of light speed without shedding substantial mass is one which has not been properly explored or exploited by researchers but which is clearly deserving of further study, particularly given the potential for input energy to be recycled within fermionic loops.